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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,176	03/24/2005	Kenji Takeda	050105	1873

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EXAMINER	
NGUYEN, NGOC YEN M	
ART UNIT	**PAPER NUMBER**
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/529,176	TAKEDA ET AL.	
	Examiner	Art Unit	
	Ngoc-Yen M. Nguyen	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-12 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Ando et al (2004/0144208).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Ando '208 discloses a process for refining raw copper material containing copper sulfide mineral characterized by a hydrometallurgical process for recovering copper and a concomitant valuable metal from a raw copper material containing a copper sulfide mineral, comprising: (1) a chlorine-aided leaching step for leaching the raw copper material in the presence of chlorine in an acidic, aqueous chloride solution to produce the leaching product liquor containing the copper ion and residue containing elemental

sulfur by leaching copper in the acidic solution, (2) a copper ion reduction step for reducing the leaching product liquor in the presence of a reductant to produce the reduction product liquor containing the cuprous ion, (3) a solvent extraction step for extracting copper with the aid of solvent from the reduction product liquor, and stripping loaded solvent to produce the stripping product liquor containing the cuprous ion and raffinate containing the ferrous ion, (4) a copper electrowinning step for electrolyzing the stripping product liquor to produce the electrolytic copper and spent electrolyte, and (5) an iron electrowinning step for electrolyzing the raffinate to produce the electrolytic iron and iron spent electrolyte composed of the aqueous iron chloride solution (note claim 1).

For step (1), the leached copper solution contains chloride (note claim 4).

For step (2), since the copper ion is reduced down to cuprous ion, the oxidation-reduction potential of the solution would inherently be within the claimed range. In any event, Ando '208 discloses that the reduction product liquid is kept at an ORP (oxidation reduction potential) (based on an Ag/AgCl electrode) of 0 to 400 mV (note paragraph [0132].

Ando '208 teaches that tributyl phosphate can be used as an extractant (note paragraph [0133]) and the concentration of a solvating extractant (e.g., tributyl phosphate) in the organic solvent phase, although not limited, is preferably 40 to 100% by volume, more preferably 50 to 100%. At below 40% by volume, it may not secure a copper extraction industrially expected. Tributyl phosphate is used normally after being diluted with a diluent, e.g., kerosene, to keep it fluid. However, the dilution should be

avoided as far as possible to improve copper ion extraction rate, which depends on concentration of the chloride ion and that of tributyl phosphate in the reduction product liquor (note paragraph [0134 and Figures 9-10).

Concentration of copper in the aqueous solution for the stripping step, although not limited, is preferably 70 g/L or less. Increasing the concentration beyond 70 g/L may cause a phenomenon in which copper conversely moves into the organic solvent phase (note paragraph [0135]).

Concentration of chlorine in the aqueous solution for the stripping step, although not limited, is preferably 50 to 350 g/L. At below 50 g/L, the stripped cuprous ion may not be kept soluble in the solution, because of its low solubility in water. The stripped cuprous ion is normally kept soluble in the solution by sufficiently increasing chlorine ion concentration of the solution for the stripping in consideration of concentration of the copper ion to be stripped. However, the chlorine ion concentration is limited to 350 g/L, which is the practical upper limit (note paragraph [0136]).

Stripping temperature for the above step, although not limited, is preferably 40 to 90°C., more preferably 50 to 90°C (note paragraph [0137]).

The contaminants which remain in the raffinate includes ferrous ion and silver ion (note paragraph [0133]).

The process of Ando '208 anticipates the claimed process.

Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 08-176693.

JP '693 discloses a process for separate and recover only copper by simple solvent extraction. A mixed matted containing copper, nickel and cobalt is leached with gaseous chlorine to form a chloride solution, i.e. leachate, containing Cu, Ni, and Co. The copper ion in the leachate is reduced to cuprous ion, and the copper is extracted with a neutral extractant such as tributyl phosphate (TBP) (note English abstract).

The oxidation-reduction potential of the liquid before the extraction is 300 mV or less on silver/silver chloride electrode (note paragraph [0017]).

The concentration of the TBP can be 40% by volume (note paragraph [0023]).

The process of JP '693 anticipates the claimed process.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando '208.

Ando '208 discloses a process as stated in the above rejection.

For the ORP value, the range of 0-400 mV as disclosed in Ando '208 overlaps the claimed range.

With respect to the encompassing and overlapping ranges previously discussed, the subject matter as a whole would have been obvious to one of ordinary skill in the art

at the time of invention to select the portion of the prior art's range which is within the range of the applicants' claims because it has been held prima facie case of obviousness to select a value in a known range by optimization for the results. *In re Boesch*, 205 USPQ 215. Additionally, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '693.

JP '693 discloses a process as stated in the above rejection.

For the ORP values, the range of "less than 300 mV" overlaps the claimed range of "0-350 mV".

For the concentration of the TBP, JP '693 teaches that the TBP can be used without diluting (note paragraph [0027]), which fairly teaches that the TBP concentration ranging from 40 to 100% by volume can be used.

With respect to the encompassing and overlapping ranges previously discussed, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time of invention to select the portion of the prior art's range which is within the range of the applicants' claims because it has been held prima facie case of obviousness to select a value in a known range by optimization for the results. *In re*

Boesch, 205 USPQ 215. Additionally, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

The difference is JP '693 does not specifically disclose the detail of the step of stripping the copper from the extractant.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to strip and to optimize the conditions of the stripping step to remove the copper so that the extractant can be reused in order to minimize the cost of fresh reactant.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner can normally be reached on Part time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ngoc-Yen M. Nguyen
Primary Examiner
Art Unit 1793

nmn
January 7, 2008